# A NEW *CYRTOMAIA*, *C. GRIFFINI*, FROM AUSTRALIA (CRUSTACEA: DECAPODA: BRACHYURA)

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A new species of crab of the genus *Cyrtomaia* is described from deepwater off the eastern coast of Australia: *C. griffini* sp. nov. This species is compared with its closest relatives, *C. suhmii* and *C. curviceros*, and remarks on the geographic distribution of the six species in this genus with large protogastric spines are given.

Une nouvelle espèce de crabe de profondeur du genre *Cyrtomaia* est décrite de la côte est de l'Australie: *C. griffini* sp. nov. Après la description de l'espèce et une comparaison avec les espèce proches, *C. suhmii* et *C. curviceros*, des remarques sur la distribution géographique des six espèces de ce genre à grandes épines protogastriques sont faites.

□*Crustacea, Decapoda, Brachyura, Cyrtomaia, new species.*

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In earlier works (Guinot and Richer de Forges, 1982a: 1097, under *Cyrtomaia gaillardi*; 1982b: 24, under *C. suhmi*; 1986: 119, under *C. suhmi*), we raised the question of the identity of some Australian material that was attributed to *Cyrtomaia suhmii*[1] Miers, 1886 (p. 18, pl. 3, fig. 2, 2a-2c) by Griffin and Brown (1976: 252, fig. 6). All the specimens from the East Australian coast have a strong intercalated orbital spine but on the holotype of *C. suhmii* Miers (from the Tulur islands to the north of the Molucca Sea) the supra-orbital edge bears only a small granule. The holotype was examined and this feature figured by Guinot and Richer de Forges (1982b, fig. 10, 11a-b). Another species, *Cyrtomaia curviceros* Bouvier, 1915 (pp. 9-15, pl. 1), originally described from Japan and similar to *C. suhmii* (cf. Guinot and Richer de Forges, 1986: 118, fig. 11a, under *C. suhmi*) is typified by a completely smooth, inermous supra-orbital edge. In their important work on the Majidae gathered by the *Siboga*, Griffin and Tranter (1986a: 30, 31) put *C. curviceros* Bouvier in synonymy with *C. suhmii* and questioned the taxonomic value of the intercalated orbital spine: 'The spine in the orbit of *Cyrtomaia* and similarly *Platymaia* doesn't constitute a more useful distinguishing feature than the other small carapace spines'. When they wrote this, the two Australians were not aware of our work, published the same year (Guinot and Richer de Forges, 1986), in which we reported the discovery of the Philippines topotypical *Cyrtomaia suhmii*. In all our material, juvenile and adult at various stages, from the Philippines, the supra-orbital edge uniformly bears a small, but distinct, intercalated granule.

The fine fresh material collected during the Cidaris I cruise and also found by the vessels *Soela*, *Southern Intruder* and *Iron Summer* on the east Australian coasts, does not belong either to *C. suhmii* or to *C. curviceros*, and the description of a new species, *C. griffini* sp. nov., is therefore required.

List of abreviations: MP, Museum national d'Histoire naturelle, Paris (B - Brachyoures); QM, Queensland Museum. Length measurements exclude pseudorostral spines.

## Cyrtomaia griffini sp. nov.
(Figs 1, 2, 3,4)

*Cyrtomaia suhmi*: Griffin and Brown (not Miers, 1886), 1976: 252, fig. 6. Griffin and Tranter, 1986a: 30, fig. 91g.

not *Cyrtomaia suhmi*: Griffin and Tranter, 1986b: 351, fig. 1.

*Cyrtomaia suhmii*: Davie and Short, 1989: 27.

MATERIAL EXAMINED

HOLOTYPE: QM W15362, ♂ (78.8 x 83.3mm), *Soela*

1 The specific spelling of Miers' species should in fact be *C. suhnii* to respect the original formulation, as Davie and Short (1989) have pointed out.

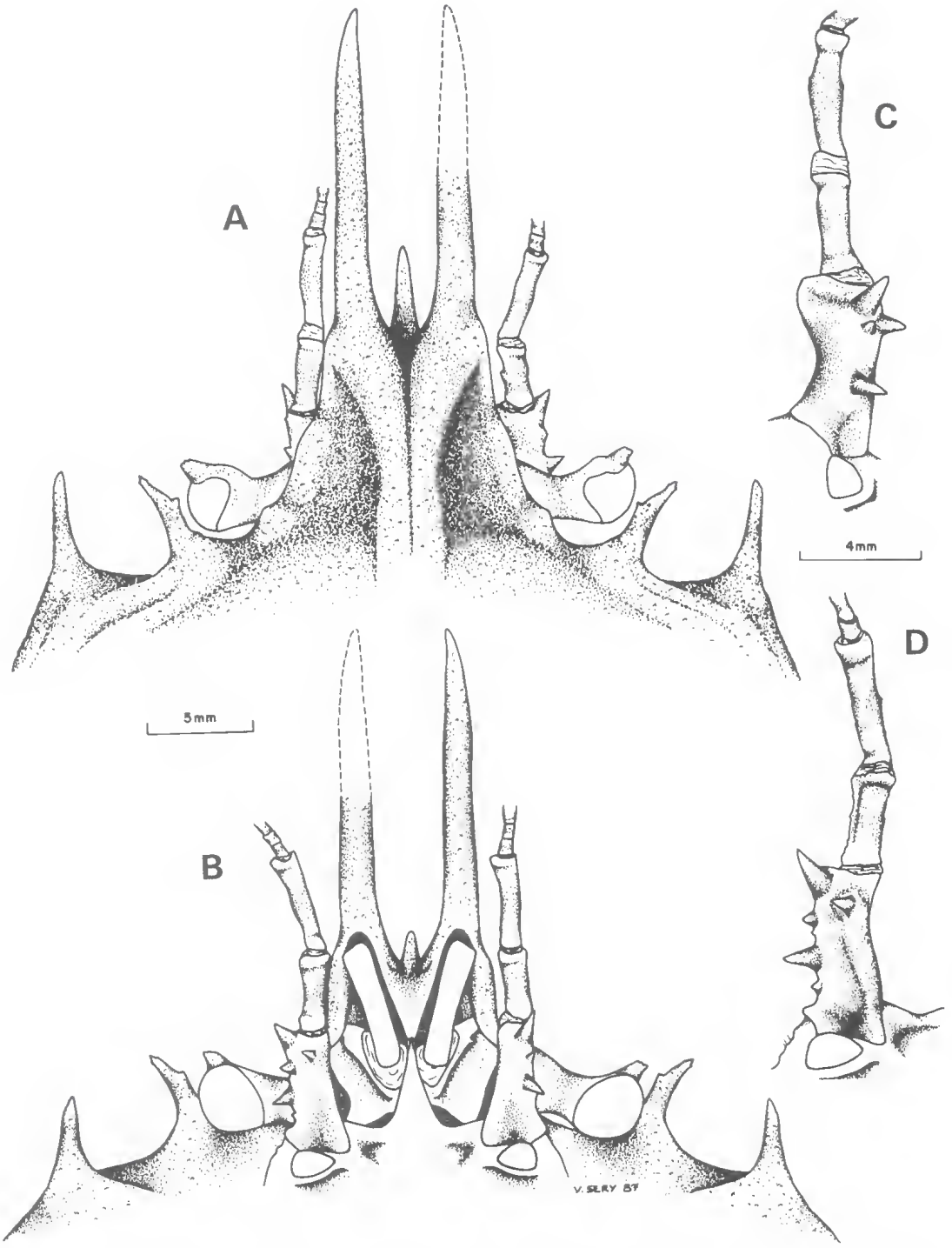


FIG. 1. *Cyrtomaia griffini* sp. nov., paratype ♀ (55 x 60.6mm), R.V. *Franklin*, Cidaris I, Stn 47-3, 505m, 17°51.35′S–143°07.83′E, 17.v.1986, beam trawl (QM W16067). A, dorsal view of fronto-orbital region. B, ventral view. C, D, detail of the antenna from two different angles.

Cr6, stn. 79, 6.xii.1985, 800m, 17°01'S, 151°20'E, P. Davie.

PARATYPES: MP-B 20555, ♀ (58 x 65mm), *Soela* Cr6, stn. 78, 6.xii.1985, 880m, 16°55'S- 151°34'E, P. Davie. QM W15360, 6♀ (57.4 x 62, 58.8 x 65.6, 61.9 x 65.7, 55.5 x 58.6, 60.5 x 65.7, 56.1 x 60.6), 5♂ (75.9 x 81.8, 46.1 x 50.1, 47.8 x 52.6, 47.9 x 52.2, 48.5 x 50.7mm), Cr6, Stn 78, 6.xii.1985, 880m, 16°55'S, 151°34'E, P. Davie. QM W16067, ♀ (55 x 60.6mm), *Cidaris I*, Stn 47-3, 15.v.1986, 17°51.35'S, 143°07.83'E, 505m. QM W16068, ovig. ♀ (50.5 x 63mm), *Cidaris I*, Stn 48-3, 17.v.1986, 17°52.00'S, 147°08.00'E, 740-680m. QM W16069, ♀ (43.8 x 49.5mm), *Cidaris I*, Stn 1-4, 6.v.1986, 18°08.69'S, 147°33.97'E, 966m.

OTHER MATERIAL: R.V. *Soela*: QM W15373, 6 ♀ (40.2 x 42.2, 40.6 x 43, 25.5 x 27.4, 24.4 x 25.7, 26.8 x 28.2, 24.4 x 24.6mm), 1 juv. ♂ (20 x 20.8mm), Cr6, Stn 78, 6.v.1985, 880m, 16°55'S, 151°14'E, P. Davie. QM W15375, 3♂ (27.2 x 27, 20.3 x 20.9, 17.3 x 17.9mm), Cr6, Stn 79, 6.xii.1985, 800m, 17°01'S, 151°20'E. QM W15361, 1♂ (74.2 x 78.9mm), 1 crushed specimen (74mm width), Cr6, Stn 80, 6.xii.1985, 700m, 17°02'S, 151°03'E, P. Davie. QM W15932, crushed juv. ♂ (20.8 x 21.5mm), Cr6, Stn 59, 2.xii.1985, 900-908m, 17°30'S, 149°00'E, P. Davie.

M.V. *Iron Summer*: QM W14908, 2♂ (60.2 x 62.7, 58.1 x 62.1mm), Shot 2, 10.v.1983, 600m, 28°19.91'S, 153°53.47'E. QM W10611, 1♀ (64.9 x 72.5mm), Shot 1, 3.x.1982, 500-540m, 27°22'S, 153°E, M. Holmes. QM W10612, 1♂ (61.3 x 66.3mm), Shot 6, 25.iii.1983, 520m, 27°13'S, 153°22'E, R. Morton. QM W10609, 1♂ (68.4 x 73.2mm), Shot 5, 13.viii.1982, 540m, 27°18'S, 153°54'E, G. Smith and J. Burke. QM W14909, 1♂ (63.2 x 61.9mm), Shot 1, 10.v.1983, 590m, 27°13.00'S, 153°52.53'E, R. Morton. QM W14916, 1♀ (63.5 x 72.7mm), Shot 3, 10.v.1983, 555m, 27°12.83'S, 153°52.87'E, R. Morton. QM W10610, 1♀ (67 x 75mm), 1♂ (62.3 x 66.9mm), Shot 4, 10.v.1983, 540m, 27°34'S, 153°56'E, R. Morton.

M.V. *Southern Intruder*: QM W11233, 1♀ (64.4 x 63.8mm), Shot 40, 30.xii.1983, 460m, 23°17'S, 153°56'E, P. Davie. QM W11232, 1♀ (60.6 x 66.2mm), Shot 37, 29.xii.1983, 550m, 23°45'S, 153°07'E, P. Davie.

## DESCRIPTION

A large species, that may measure as much as 80mm across the cephalothorax. Carapace is smooth and shiny, with a few bristles in front of the protogastric spines. Protogastric spines distinctly longer than the others, in the form of parallel horns, pointing forward and very slightly incurved; the spines appear smooth to the naked eye and to the touch, but in fact are very finely granular. A single, pointed gastric spine with a very slight granule in front. Two pointed and raised cardiac spines.

Very sharp, slanting anterior branchial spine, similar in size to the single gastric spine. A very short, but also sharp, posterior branchial spine, with a tubercle behind it. A branchial spine, pointed, but shorter than the abovementioned. On the latero-posterior edge of the branchial area is a line of five spinules. The intestinal area is almost imperceptible. Long pointed pseudo-rostral spines, subparallel on the paratype (Fig. 1A) but diverging on other specimens (Fig. 4A); the pointed rostral spine extends from the front; there is a broad supraocular hood with smooth edges. A very distinct intercalated orbital spine, fine and sharp, pointing obliquely towards the postocular spine. Strong postocular spine, pointing forwards (Fig. 4B).

Dorsal facet with marked relief; clear branchio-cardiac grooves (Fig. 4A), very fine and diffuse granulation, visible only under a binocular microscope.

Short ocular peduncle with a single horn, (Fig. 1A). Antennal basal article with three large spines, plus a small one on the lower facet (Fig. 1C).

The meri of P4 and P5 are smooth, as are the carpi and propodi; in the female, the P2 merus is distinctly longer than that on P1; in the male, on the other hand, the P2 merus is much shorter than that of P1, and the P1 propodus is broader.

The live animal is orange-pink all over; the eggs of the ovigerous female are navy blue.

## DISCUSSION

The differences between *Cyrtomaia griffini* sp. nov. and *C. suhmii* Miers, 1886 are as follows: an intercalated orbital spine is not found in *C. suhmii* but is found in *C. griffini*, both in males and in females, whatever their size; the number of spines on the antennal basal article is 3 in *C. griffini* and 4 or 5 in *C. suhmii*.

The study of numerous species of the genus *Cyrtomaia* shows a stability in the shape and spinulation of the supra-orbital edge. The presence of an intercalated orbital spine constitutes a constant character whatever the size or sex. Guinot and Richer de Forges (1986: 117-19, fig. 11a) reported on many specimens of *C. suhmii* from the Philippines Islands and confirmed that, as on the holotype, the supra-orbital edge was always smooth. *Cyrtomaia curviceros* Bouvier, 1915, is another large species with very

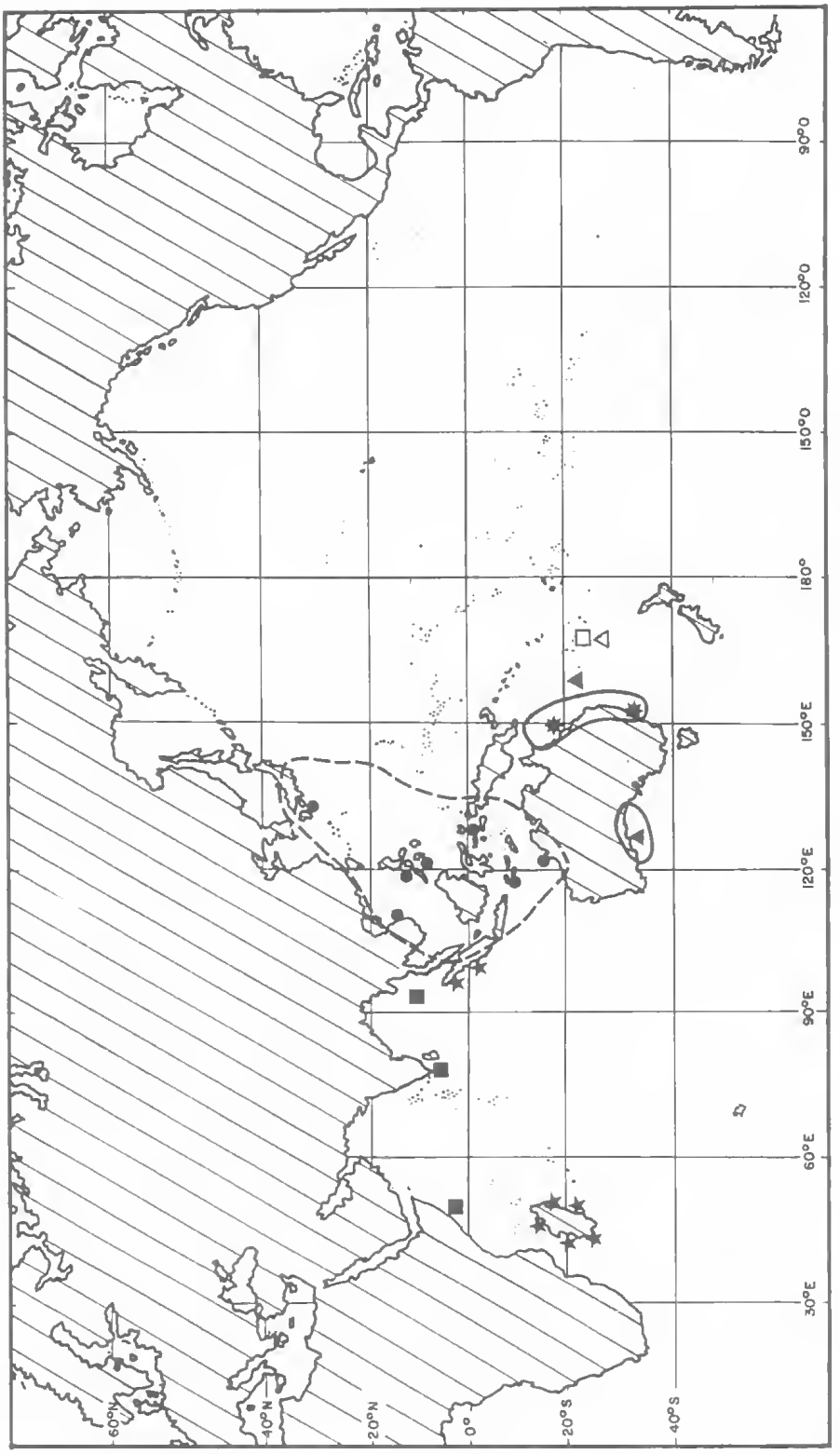


FIG. 2. Distribution of the group of species of *Cyriomaia* related to *C. suhmii* Miers, 1886. ●*C. suhmii* and *C. curviceros*; ▲ *C. maccullochi*; ✱*C. griffini*; ★*C. gaillardi*; ■*C. goodridgei*; Δ*C. coriolisi*; □*C. cornuta*.

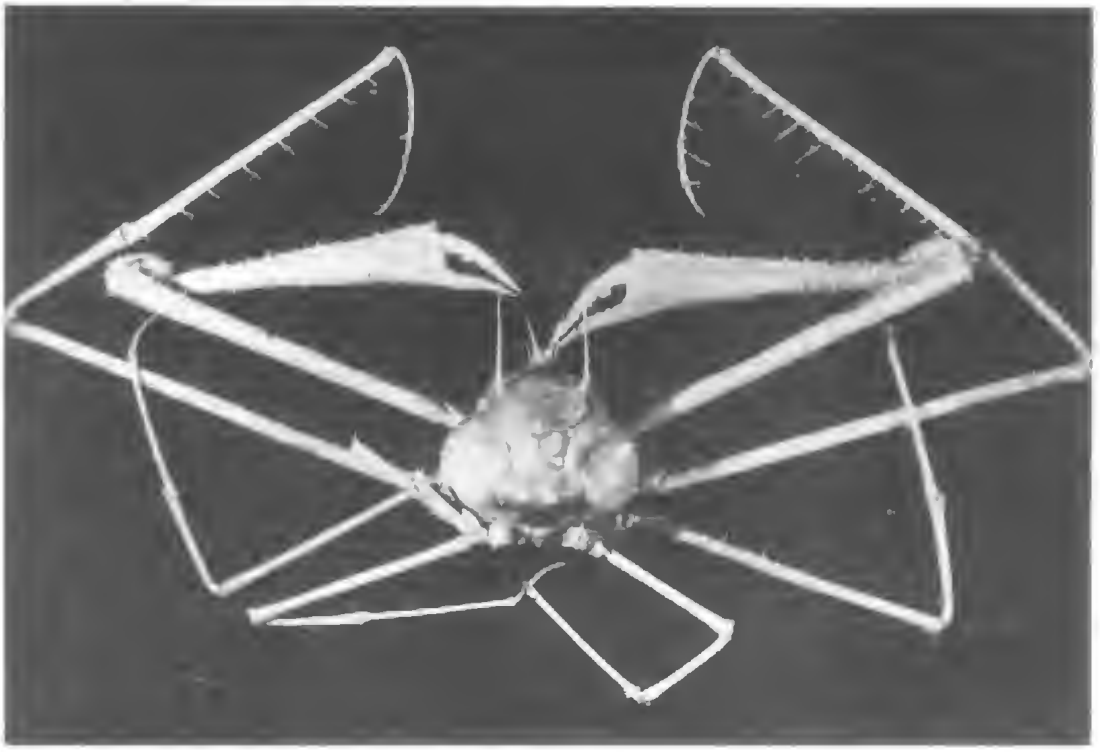

FIG. 3. *Cyrtomaia griffini* sp. nov., holotype ♂ (78.8 x 83.3mm), Queensland, *Soela*, Cr.6, Stn 79, 800m, 6.xii.1985, P. Davie (QM W15362), dorsal view.

well-developed protogastric spines but is known only from the holotype, a very large specimen from Japan. It also has a smooth supra-orbital edge and this is the reason why some authors think it is a synonym of *C. suhmii*. It will be necessary to examine topotypical material of *C. curviceros* before this problem can be finally resolved. *C.curviceros* (see Guinot and Richer de Forges, 1982b: 24, fig. 12) like *C. suhmii* is different from *C. griffini* by having the supra-orbital edge smooth and the basal antennular article with five spines.

*C. gaillardi* Guinot and Richer de Forges, 1982, found in the waters of Madagascar can easily be distinguished from *C. griffini* by its divergent pseudorostral spines, the granular carapace (in *C. griffini* it is smooth), and the possession of a small intercalated orbital spine (in *C. griffini* this is large and pointed).

The other Australian species, *C. maccullochi* Rathbun, 1918, from the Great Australian Bight in southern Australia, is smaller than *C. griffini*. It also has long protogastric spines but has no intercalated orbital spine and its carapace is granular.

It would appear that the specimens of *C. suhmii* reported by Griffin and Tranter (1986b), from the Molucca Passage and from the continental slope of northwestern Australia (Port Hedland) are very different from those of the eastern coast. Indeed, the excellent photographs illustrating this work show that the supra- orbital edge is smooth, with no spine or granule; this species should therefore be related to the *C. suhmii* - *C. curviceros* group of species.

It seems, therefore, that of the species that have very long protogastric spines, there are three that inhabit the Australian coasts, *C. maccullochi* in the south, *C. suhmii* in the northwest and *C. griffini* in the east (Fig. 2). One other species of *Cyrtomaia*, *C. horrida* also occurs off the east coast.

Richer de Forges and Guinot (1988) have just described three new species of the genus *Cyrtomaia*, gathered in New Caledonia and in the Chesterfield Islands. Two of them, *C. cornuta* and *C. coriolisi*, are relatively large in size and

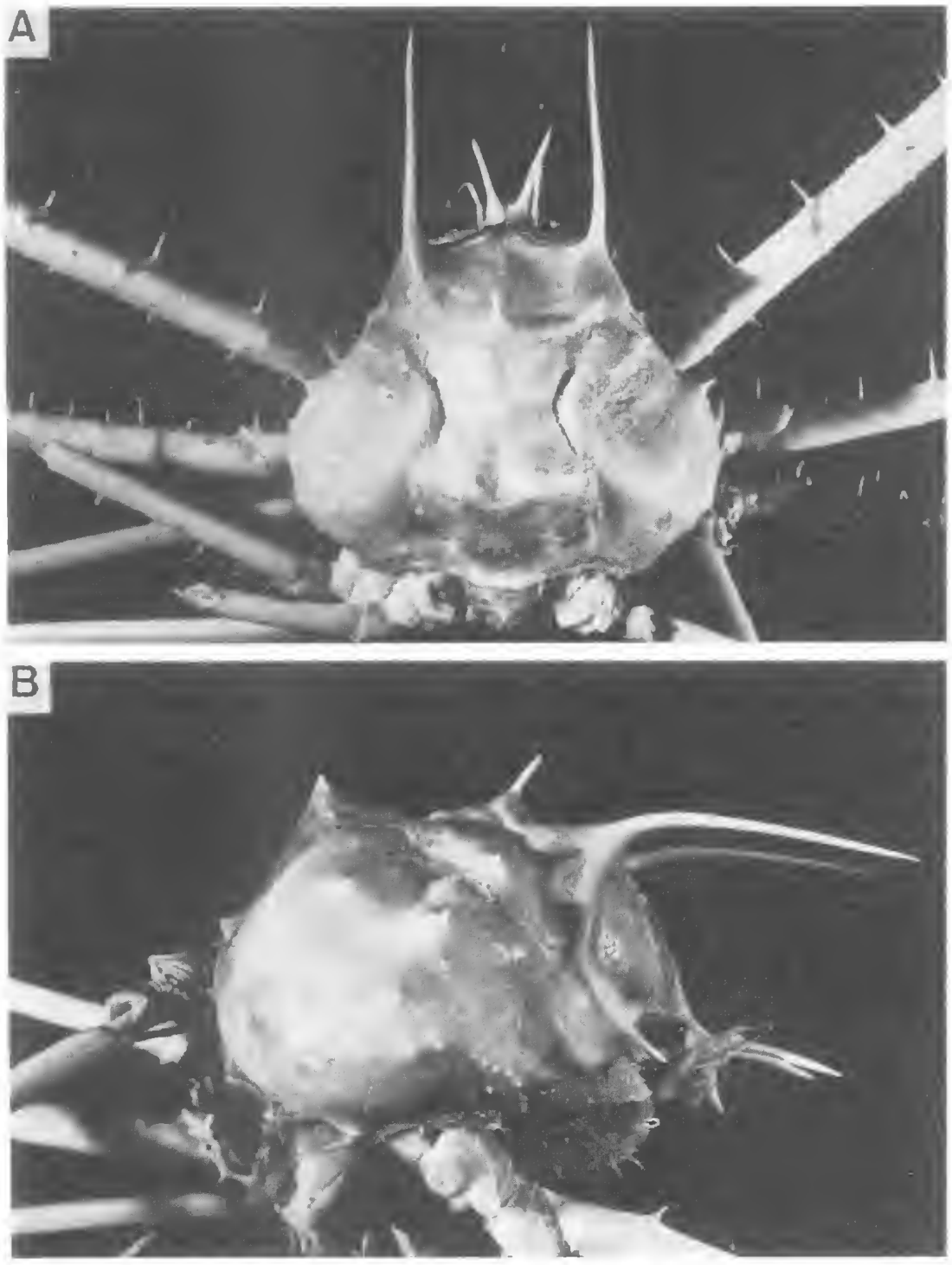


FIG. 4. *Cyrtomaia griffini* sp. nov., holotype ♂ (78.8 x 83.3mm), Queensland, *Soela*, Cr.6, Stn 79, 800m, 6.xii.1985, P. Davie (QM W15362). A, enlargement of the carapace; B, lateral view.

the fact that their longest spines are the protogastric spines places them in the same group of species as *C. griffini*.

*C. coriolisi*, taken at a depth of 650m in the Chesterfield Islands and on the Norfolk Ridge, is very similar to *C. griffini*, but it is smaller in size; its carapace is finely granular (it is smooth in *C. griffini*); and its protogastric spines are longer.

*C. cornuta*, found in the south of New Caledonia (at depths of 270 to 535m), has granular legs and carapace, and very long, curved protogastric spines.

DISTRIBUTION

Northeastern coast of Australia between 35°S and 17°S, on sandy-mud bottoms situated at depths of 360 to 980m. The present geographical distribution of the large species of *Cyrtomaia* with long protogastric spines (*C. suhmii*, *C. curviceros*, *C. maccullochi*, *C. griffini*, *C. gaillardi*, *C. goodridgei*) indicates that they are quite distinct entities (Fig. 2).

It appears that the group *C. suhmii*/*C. curviceros* is limited to the western Pacific and East Indian Ocean zone between Japan and the northwest of Australia, with several spots in the Philippines and the Sunda Islands; it would be impossible for these bathyal species to pass through the Torres Strait on account of the very shallow shelf between Papua New Guinea and northern Australia. These species have not been reported from the Marianas despite all the trap fishing that has been done in this area by L. Eldredge. It would be most interesting to obtain some *Cyrtomaia* from the Solomon Islands to see if there is a relationship between them and *C. suhmii* or *C. griffini*.

The species *C. maccullochi* has been found only in southern Australia, at a very low latitude (33°S). Griffin and Tranter (1986a) quote a fine male in the South China Sea, which they relate, with reservations, to *C. maccullochi*.

The distribution of the species *C. goodridgei* and *C. gaillardi* in the Indian Ocean appears very scattered (Guinot, 1985); this is probably because there has been so little sampling. To understand the distribution of these species, it would be necessary to collect them from the different types of sea- bed relief (e.g. sea mounts, ridges) which have served as bridges during the geological eras.

The genus *Cyrtomaia* Miers is typically bathyal (200-2000m), and the geographical spread of the species seems to be limited by the immense abyssal zones; their distribution is thus naturally discontinuous.

ETYMOLOGY

We dedicate this species to Dr D.J.G. Griffin, who has done a great deal of work on the Majidae and especially on bathyal fauna.

## ACKNOWLEDGEMENTS

Dr D.J.G. Griffin received one of us (Richer de Forges) at the Australian Museum in Sydney and it gives us much pleasure to pay him a tribute in dedicating this species to him. We extend sincere thanks to Mr P. Davie who placed his *C. suhmii* material at our disposal at the Queensland Museum and who also suggested we describe *Cyrtomaia griffini* sp. nov. in the *Memoirs of the Queensland Museum*.

We also thank Ms V. Sery for the drawings, J. Rebière for the photographs and J. Semblat for preparing the manuscript.

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